

Climate Action Plan



Public Forum
September 10, 2019



What is a Climate Action Plan (CAP)?

Tempe's Climate Action Plan:

- Global Covenant of Mayors
- 12 actions to reduce GHG emissions and improve resilience to extreme heat
- New Performance Measure for community GHG emissions

Related Performance Measures

- Carbon neutrality in municipal operations by 2050, with a strategy of 100% renewable energy sources by 2035 **(4.19)**
- Achieving a citywide 25% tree and shade canopy by 2040 **(4.11)**
- Creating a multimodal transportation system (20-minute city) where residents can meet all basic daily, non-work needs **(3.26)**

What is in Tempe's Climate Action Plan?

- Overview
- Community Actions
 - **Emissions Reduction**
 - Energy & Energy Efficiency
 - Transportation
 - **Resilience**
 - Extreme Heat
- Municipal Actions – GHG Inventory
- Climate Action Plan 2021 Update

Emission Reduction vs. Resilience

- **Emissions Reduction: Energy and Transportation**
 - Reduce greenhouse gas emissions
 - Become a more livable and economically viable
 - Invest in a better city for future generations
- **Resilience: Extreme Heat**
 - Become more resilient to climate change
 - Help Tempe achieve its sustainability goals

Emissions in Tempe

- **Municipal emissions:** City facilities and operations
- **Community emissions:** Electricity production and transportation emissions

GHG Emissions Baseline

Municipal

**2015 Emissions -
City of Tempe**

28,723 metric tons
CO₂e, electricity only

40,670 metric tons
CO₂e, electricity and gas
for vehicles and buildings



equivalent to
electricity use of
**6,096
homes**

Community

**2015 Emissions -
All residents, business,
and organizations in
Tempe**

2,023,229 metric tons
CO₂e, electricity only

3,667,560 metric tons
CO₂e, electricity and gas for
vehicles and buildings

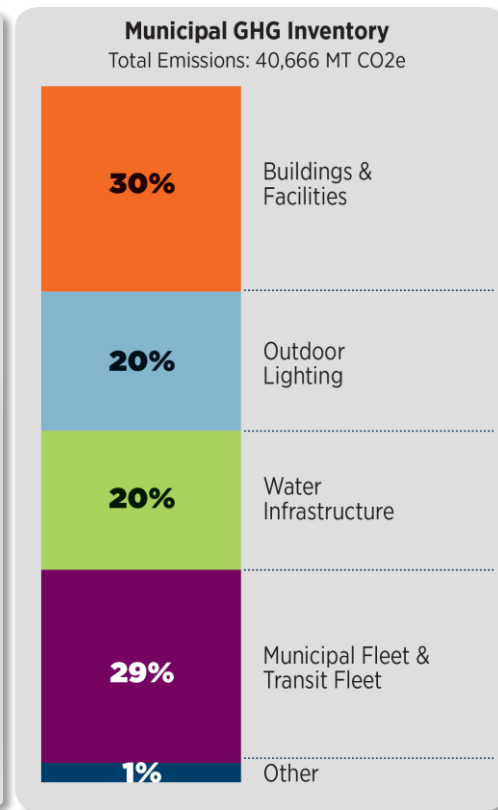
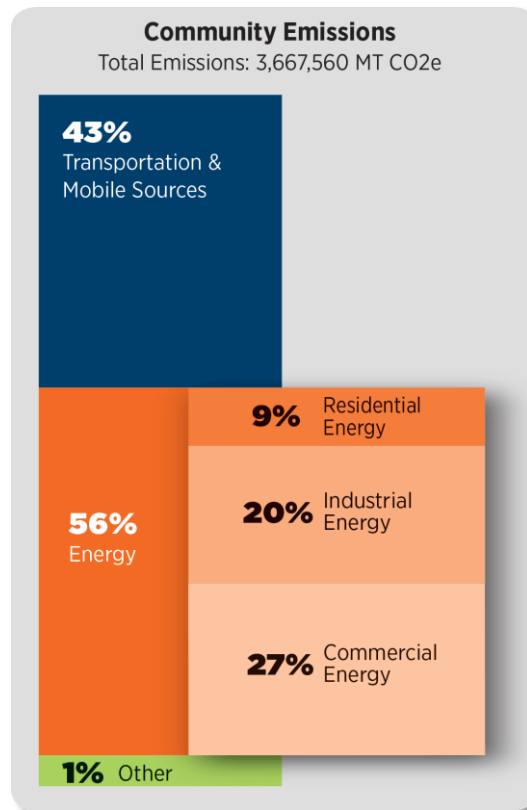


equivalent to
electricity use of
**549,694
homes**

Emissions in Tempe

- Community emissions: Electricity production and transportation emissions

- Municipal emissions: City facilities and operations



Municipal Operations Emissions

- City buildings, outdoor lighting, and water treatment account for **70% of municipal emissions**
- City fleet, transit fleet, and employee commute account for **30% of municipal emissions**



Municipal Actions: City Buildings

City Buildings

- Solar panels at six facilities
- Energy audits and retrofits

Next action

- Facilities Sustainability Plan



Municipal Actions: Outdoor Lighting

Outdoor Lighting

- Converted streetlights to LED

Next actions

- LED street lighting
- LED park lighting
- LED building exterior lighting



Municipal Actions: Water Treatment

Water Treatment

- Research technologies to lower energy & water use
- Power operations with renewable energy

Next action

- Assessment of water treatment operations



Municipal Actions: City Fleet

● Fleet and Transit Fleet

- Prioritize electric vehicle (EV) investments
- Orbit & Flash buses – alternative fuel

● Next actions

- Electric vehicle feasibility study
- Increase EV purchasing



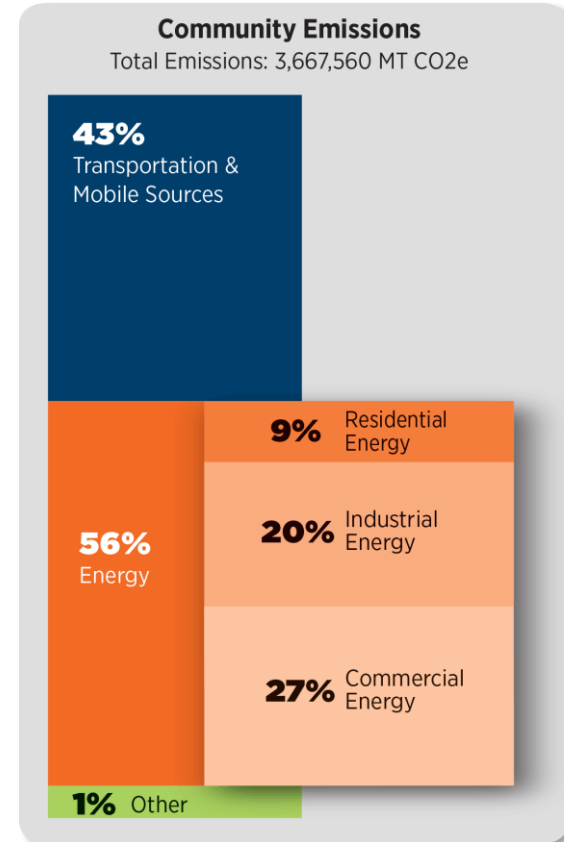
Moving Towards Municipal Carbon Neutrality

- **Partner** with utilities on fleet electrification & renewable energy
- **Collaborate** with city departments - facilities, streets, transit, water utilities - to reduce carbon emissions
- **Measure and report** on carbon emissions reduction

Community GHG Emissions

● **56% of GHG emissions** in Tempe are from energy production across residents, businesses, industries, and nonprofits

● **43% of the GHG emissions** in Tempe are from transportation



Community Climate Action: Energy

- 56% of community GHG emissions = **electricity production**
- Challenge:** A least 50% of electricity that powers Tempe homes and businesses comes from fossil fuels
- Support** businesses and residents in **load shifting and energy upgrades**
 - Saves money
 - Promotes clean energy economy



Community Climate Action: Transportation

- **43%** of community GHG emissions = **vehicular emissions**
- Tempe **leads Arizona** in alternative transportation: bus, bike, light rail
- The shift from **single-occupancy vehicles** to **alternative modes of transportation**:
 - Improves air quality
 - Lowers GHG emissions



Community Climate Action: Extreme Heat

- Summers have **more extreme heat days**, fueled by **urban heat island (UHI)** effect
- Extreme heat poses **serious health risks** for vulnerable populations and **Tempe's economy**
- **Green infrastructure** and low-impact development can make Tempe **cooler and more livable**.



Collaboration on the CAP

- Building Capacity
- Community Engagement



Capacity Building

- Future Shocks and City Resilience boardgame
 - **Engage/educate** city leaders about sustainability issues
 - Present **new perspectives** and thinking for sustainable management
- Sustainability Goal Setting and Strategy Workshop
 - **Introduce** focus areas of CAP
 - Develop **deeper understanding** of **sustainable** infrastructure and **resilient** communities



Community Engagement

● Forums

- Build support for key investments in target areas (energy, transportation, heat, etc.)

● Engagement with City Departments

- Ensure alignment of actions and the climate action planning process with existing city actions and planning

● Interviews

- Generating ideas, getting feedback on initial concepts and testing communications strategy



Forum Discussions and Stakeholders

Energy:

- Opportunities to support energy upgrades in residential and commercial buildings
- Community solar development to increase access to renewable energy
- **Stakeholders:** APS, SRP, ASU, Renewable Energy Firms

Transportation:

- Electric vehicles use and infrastructure
- Streetcar and other modes of transportation that reduce congestion and the need for car travel
- **Stakeholders:** Valley Metro, ADOT, Waymo, Tempe Chamber of Commerce

Extreme Heat:

- Cooling the city with trees, vegetation, material use and smart stormwater practices
- Lessening the impact of extreme heat through education and preparedness
- **Stakeholders:** AZ Dept. of Forestry & Fire Management, Watershed Management Group, SRP Sustainability Team, Tempe FMR, ASU

Engagement with City Departments

- ASU, MAG, DTA, and Engineering and Transportation on transportation actions
- ASU and Strategic Management and Diversity Office on autonomous vehicles
- Engineering and Transportation and Internal Services on energy actions
- Sustainable Cities Network on extreme heat and green infrastructure
- Fire Medical Rescue Department, and Police Department on Emergency Management
- Community Development on Green Building Code

Interviews

- Conducted semi-structured, group interviews with:
 - 42 Tempe city staff
 - Non-profits
 - Commissioners
 - Key stakeholders such as the Tempe Chamber of Commerce and Local First Arizona
- Results included:
 - Current actions to reduce emissions
 - Recommendations for future collaborations
 - Areas of strength, investment, expertise for CAP

Timeline: CAP Engagement

- Spring 2018 Internal Interviews
- Summer 2018 External Interviews
- Fall 2018 Engagements with City Departments
- September 2018 Forums on *Extreme Heat*
- October 30th 2018 Forum on *Energy*
- Oct./Nov. 2018 Forums on *Transportation*
- February 26th 2019 Forums on *Extreme Heat and Energy*
- March 19th 2019 Climate Action Plan Open House
- Summer 2019 Finalize Plan
- September 7th CAP Draft Review
- September 10th CAP Draft Review
- September 21st CAP Draft Review
- Fall 2019 Council Adoption

Climate Action Plan Overview

Energy and Energy Efficiency	1	Create resilient energy hubs with renewable energy and energy storage.
	2	Create a revolving fund to support energy upgrades to businesses and schools in Tempe.
	3	Create a centralized sustainability platform to help businesses implement energy upgrades.
	4	Pilot solar electric vehicle charging to capture and store energy during peak sunlight hours.

Transportation	1	Create an urban core Transportation Demand Management program and a Transportation Management Association.
	2	Prioritize safe and low-stress connections by walking, biking or riding transit in all transportation projects.
	3	Invest in electric vehicle charging infrastructure and adopt building code changes that support electric vehicles.
	4	Develop an automated mobility readiness guide and policy framework.

Extreme Heat	1	Adopt Green Infrastructure and low-impact development standards.
	2	Adopt Green Building Code with support for increasing shade and use of cool materials.
	3	Further invest in Urban Forestry Master Plan to provide more shade in parks and along streets.
	4	Invest in new emergency management program and develop resilience plan for extreme heat.

Highlight Energy Action

● Resilient energy hubs

- Partner with utilities to **reduce barriers to adding solar and battery storage** to community centers, schools, and churches.
- Meet the power needs of the most **vulnerable populations** in case of **emergency**



Highlight Transportation Action

- **Transportation Demand Management (TDM) program**
 - A TDM program **encourages transit and carpooling**
 - Provides **congestion mitigation alternatives**
 - The Transportation Management Association (TMA) is a public-private partnership that aims to **reduce traffic congestion and carbon emissions.**



Highlight Extreme Heat Action

● Green Infrastructure & Low Impact Design Standards

- Design landscapes that **capture stormwater** while growing **vegetation** for **shade** and urban **cooling**
- Promotes a **walkable** and comfortable city
- **Saves water**
- Keeps Tempe **cool**



Highlight Extreme Heat Action

● International Green Construction Code (IgCC)

- Make construction **more sustainable**
 - **Increased resilience** to extreme heat
- Encourage **sustainable** construction **methods** and **materials**
 - Structural **shade**
 - Supports **cool** materials
 - Requires more **tree canopy** coverage



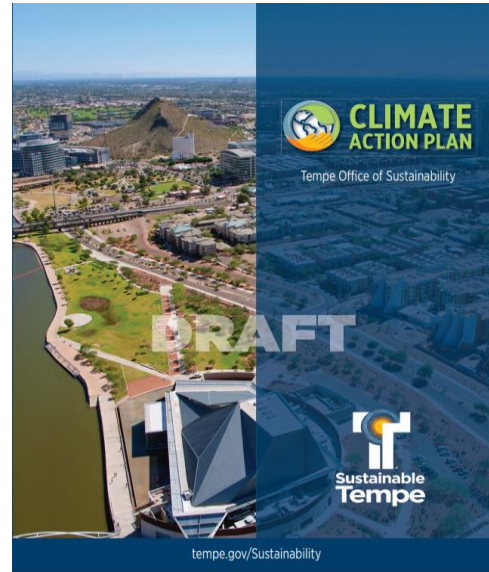
What's Next: CAP 2021 Update

- Tempe's CAP 2021 Update will incorporate the following **guiding principles** to ensure **quality and effective climate action** is taken:
 - **Fiscal responsibility**
 - Make financially wise climate action investments
 - **Equity**
 - Prioritize job creation and professional development
 - **Engagement/Education**
 - Create engagements that allow residents connect with content
 - **Enterprise**
 - Tempe businesses can promote climate action
 - **Effectiveness/Evidence**
 - Evidence that climate actions have an impact

Timeline (Future and CAP 2021 Update)

- September 7th Public Event
- September 10th Public Event
- September 21st Public Event and Heat Walk
- Fall 2019 Finalize CAP
- Fall 2019 Council Approval
- Spring 2020 Forums on CAP 2021 Update
- Spring 2021 Analyze 2020 data
- Summer 2021 Draft & edit CAP 2021 Update
- November 2021 Council Adoption

GHG Reduction Target Recommendation



- 80% of 2015 community GHG emissions by 2050 and 100% carbon neutral by 2060